THE ZOOGOER

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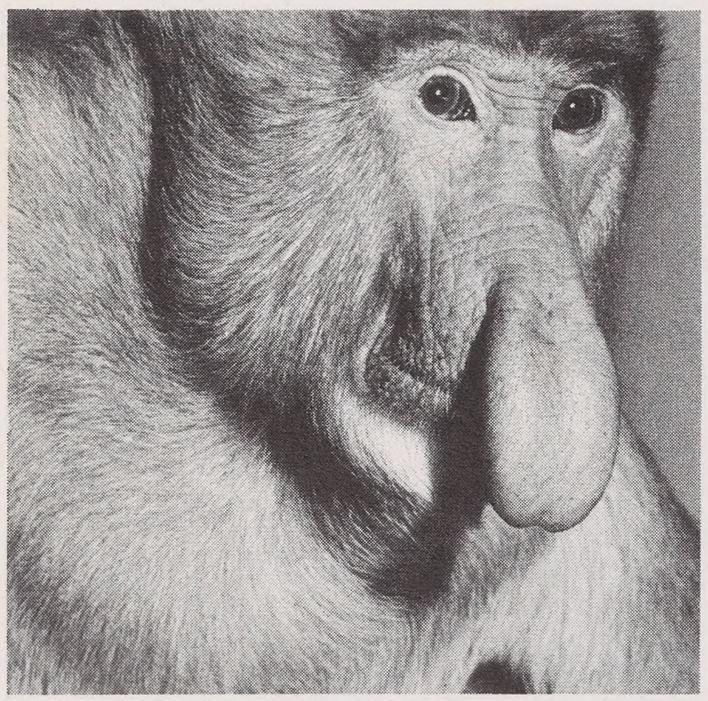

Front Cover: The Cyrano of primates, the rare proboscis monkey is a first ever at the National Zoo.

Back Cover: Playing the role of a spotted cat, a budding zoologist discovers the fun of learning by doing at the new ZooLab.

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is a non-profit organization of individuals and families who are interested in supporting Zoo education, research, and conservation.

As a FONZ, you and your family receive many benefits—publications, discount privileges, and invitations to special programs and activities—to make your zoo-going more enjoyable and educational.

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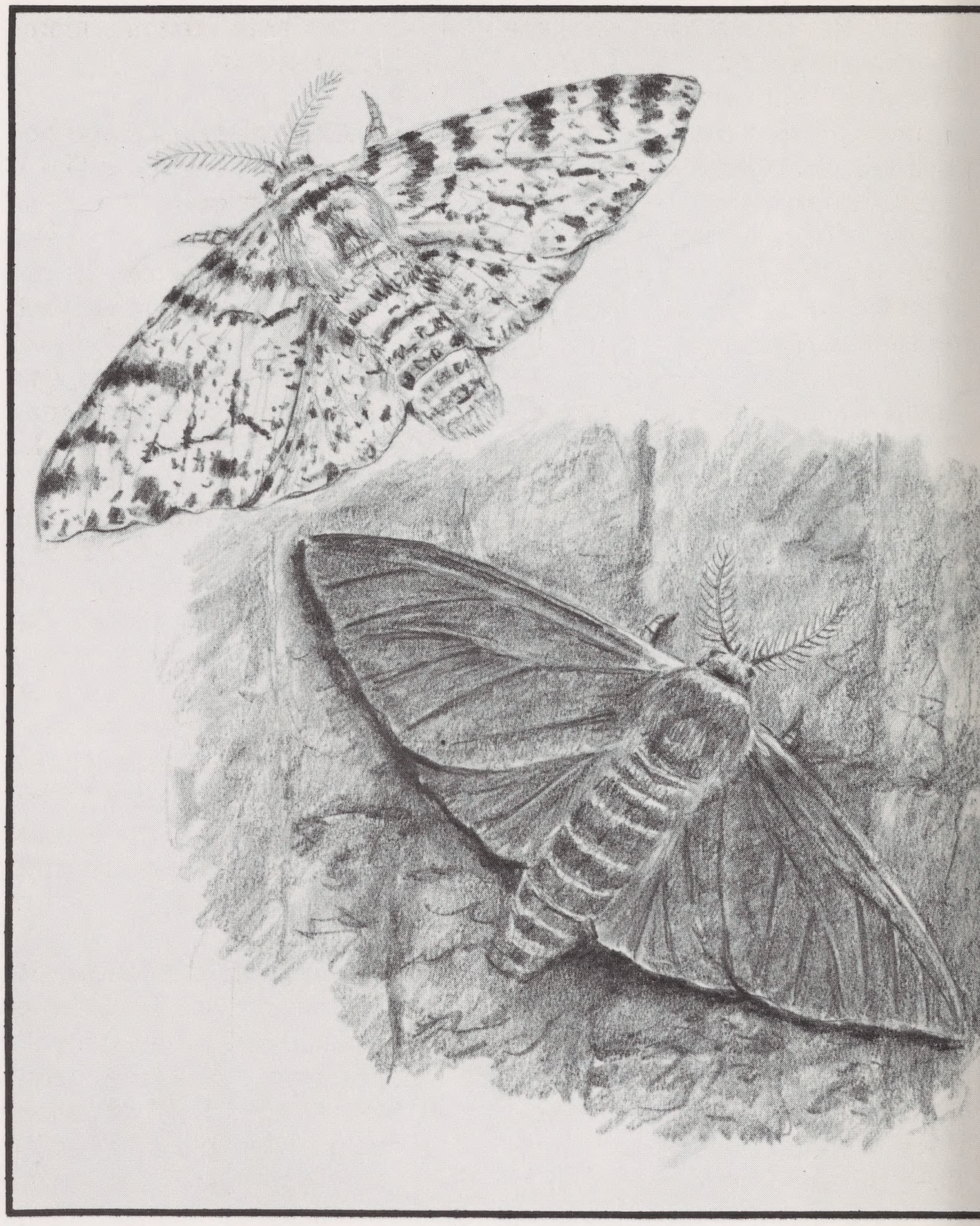
Evolution

Evolution

by Sally Tongren
FONZ House Guide

Have you ever wondered how the elephant got his trunk or how the rhinoceros got his skin? Most of us have a hazy memory of evolution from school days, but often it isn't much more accurate than Kipling's *Just So Stories* and is far less colorful. But evolution is a very dramatic tale. The slow change of one species into others in response to selective pressure from the environment has produced the wonderful variety of animals in our world.

The story starts with the genetic makeup of the individual. We know that no two individuals, animal or plant, are identical. Each has a unique set of genes that make it what it is. A gene is an element of a chromosome that governs the inheritance of certain characteristics. The effect may be visible, like hair color, or invisible, like blood type. When two individuals mate, each provides half the genes, which combine at random to produce the characteristics of the offspring. Occasionally a gene itself alters or "mu-



A classic example of "instant" evolution, the peppered moth of England proved how rapidly insects can react to environmental change.

Previous Page: Whether in plain dress (wildebeest) or fancy (zebra), zoo animals demonstrate the wonders of evolution by their infinite variety.

tates." Recombination and the rare successful mutation produce offspring that are different in some way from the parents. It is in these small variations that the evolutionary process begins. Those offspring that inherit the traits which equip them to live in their environment will mature and reproduce. The others will not.

Environment is the sum of all the factors that affect an animal's life. Climate, food, enemies, and shelter are all part of it. Animals are not free to live just anywhere. Geese and ducks live near water and black bears in forests. Even species with a wide range will occupy only parts of it and may develop local populations.

A species is a group of similar animals, all of which are potentially able to breed with each other, but not with other related groups. Field sparrows and chipping sparrows look alike, but do not interbreed; they belong to two different species. Most pairing takes place within local populations of the species. However, there is contact between populations through immigration and at the borders of their areas, so there is a continuous exchange of genes between these groups, known as gene flow. The whole species has a common gene pool, but because local populations differ slightly, this pool contains many possible variations.

Natural selection takes place because the environment acts like a sieve, allowing only the best adapted individuals to pass through. This is selective pressure, and since there is constant competition between members of a species for food and mates, the result is individuals who fit a specific environment very closely.

Because no two environments are exactly alike, local populations often become different from one another, enough so that they are classed as races or sub-species. There are some 12 sub-species of Canada geese, for example, distinguished mostly by size. These nest in different areas but interbreed readily if they come into contact, because they are still one species.

Evolution is not revolution. It tends to conservatism. In a stable environment, most changes will be suppressed since they disturb the balance. The horseshoe crab has not changed in 200 million years! But what if the environment changes? Fitness must include a capacity for change if a species will evolve and survive.

Consider the example of the peppered moth. Less than 200 years ago, in pre-industrial England, there was a species of small grey and white moths with a rare black variety. The grey moths spent the day resting on lichen-covered tree trunks where they were almost invisible. As the industrial revolution got under way, smoke and soot spread through the countryside, killing the lichens and staining the tree trunks dark. The grey moths were now very visible and were picked off by hungry birds. In contrast, the black moths were now camouflaged. Within decades, the black moth had become the common form, and the grey ones survived only in corners where industrial pollution did not reach. This is not a case of forming a new species, since the two forms interbreed, but it does show how a species can meet new challenges. In this instance, a trait which was a disadvantage and would probably have disappeared eventually became an advantage.

Insects like the peppered moth adapt rapidly to selective pressures because they produce many large generations in a short time. Any tiny advantage can spread rapidly. Flies and mosquitos have developed forms that resist DDT and other insecticides. If only a handful of individuals survive a spraying, they quickly build up their numbers with a new form.

Darwin's Finches

warbler

parrot-billed or
large tree

medium tree

small tree

tool-using or
woodpecker

mangrove

vegetarian or
vegetarian tree

large ground

medium ground or
percolator

small ground

sharp-billed ground

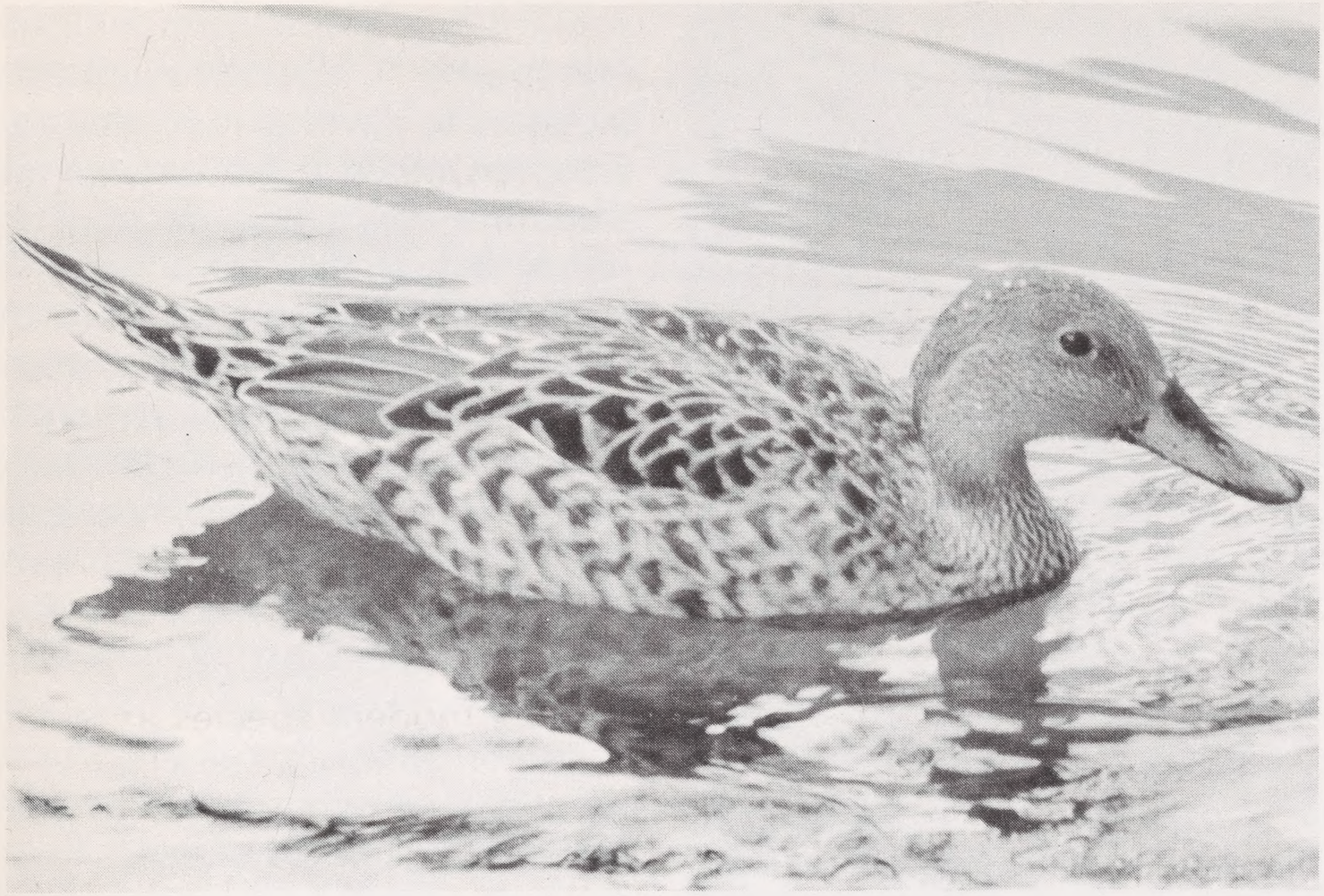
cactus ground

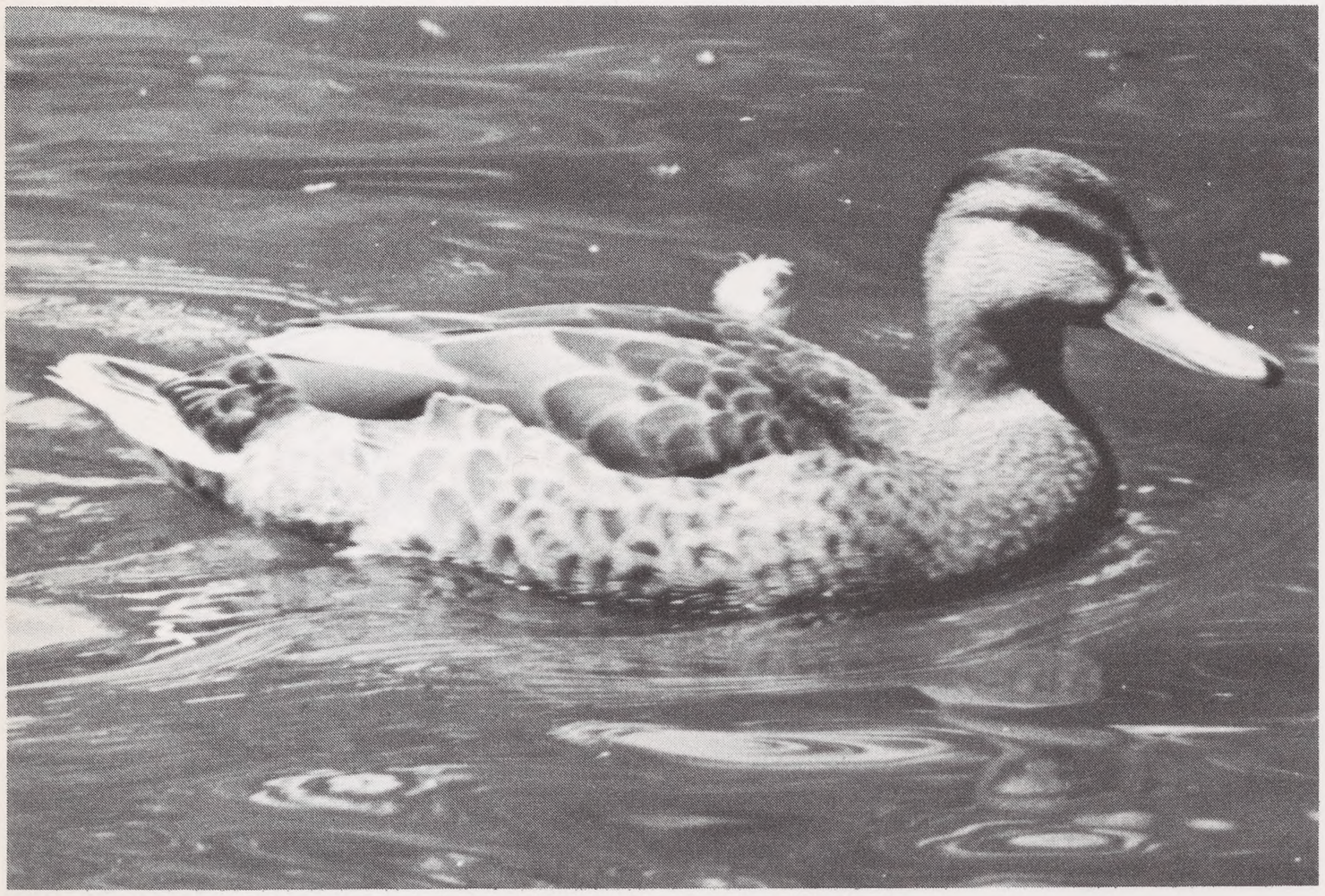
large cactus ground

So how do new species evolve? There is a gene pool, which is stable but contains material for variation; natural selection, which sifts out poorly adapted variations; and local populations, which may change to become sub-species. Still another factor is needed—isolation. Usually this is geographic isolation. Geologic or climatic change may cut a population off from the main body of the species. Sometimes a wide river or an ocean strait is enough. Many modern species arose during the ice age when glaciers cut through their range. Sometimes a small group may float or be blown to a distant island. The unique animals of the Galapagos and other oceanic islands are the result of such voyages. These islands boast a number of species that show distant relationships to mainland species but developed in isolation.

The Darwin's finches of the Galapagos are a classic success story in the evolution of new species. Long ago a flock of South American birds were wind blown to the Galapagos, where they found a place with few animals and very little competition. They were free to live where they liked

Different beaks for different eats, 13 species of Darwin's finches have developed on the Galapagos Islands to take full advantage of their specialized diets.





Many duck species, like the female mallard (below) and common pintail (above), look alike and share the same pond, but they breed only to males of their own species who court in the "proper" manner.

and eat anything they could eat. Gradually small differences in beak type began to intensify. We do not know what the ancestor was like, but certainly some beaks became heavier and more suited to seed eating while others evolved toward the sharp insect-eating type. Specialization is generally an advantage, since a specialist can efficiently use a certain type of food, large seeds for instance. Specialization reduces competition in a community and actually allows more animals to live in a given area. Increasingly, more specialized finches, equipped to eat seeds or insects, had an advantage and passed on their genes to a new generation. Other structural and behavioral differences appeared, until today 13 species of finch exist in the Galapagos, each with distinctive beaks and plumage. Some eat insects, some eat fruit seeds or cactus. One probes for insects like a woodpecker, but lacking the woodpecker's long tongue, uses a cactus spine as a tool to probe for grubs. If anyone doubts that potential genetic variation exists in one species to form many others, they need only look at the many breeds of domestic dog. True, these are the result of highly unnatural selection, but that so many types have come from one or two ancestors shows what potential exists.

The test of species formation comes when the old and new forms meet again. If they interbreed, they are not two different species. If enough structural and behavioral differences have occurred, they will not breed or will not produce fertile young and are clearly two species.

Much animal behavior is genetically determined and inherited, too. Behavior is a powerful bar to the formation of hybrids. Many duck species have females that look alike and may be courted by males of other species, but these ducks will respond only to drakes who court in the "proper" manner —males of their own species. Occasionally hybrids occur, but their behavior is so mixed, they are not accepted by either parent species.

It is a mistake to say that an animal has certain structures or habits because it lives in a certain place. It lives there because its ancestors had certain structures and abilities to start with, and selection has honed these to a fine point. The evolving hoof and the ruminant stomach allowed early horses and antelopes to move into the grasslands. Gradually teeth and other structures changed to meet new conditions, but all these changes were built on existing structures.

The Zoo's antelopes furnish a fine example of "adaptive radiation," the trend to develop forms from a common ancestor that can use all parts of a new environment. The duiker is probably most like the ancestral antelope and is a browser of the deep rain forest. Dik-diks browse on arid scrub growth. The bongo, with its striking red and white striped coat, is also a forest animal that can browse on leaves and even the pith of fallen trees. The wildebeest is a herd animal of open plains. It prefers short grass and needs a good deal of water, while the oryx is the true desert liver and can go without water almost indefinitely, even in hot weather.

The Zoo's scimitar-horned oryx with their distinctively long and backward curving horns demonstrate "adaptive radiation," or the trend to develop forms from a common ancestor that can use all parts of a new environment.

Another evolutionary phenomenon is "convergence." This is the tendency of unrelated animals to meet the same problem with the same solution. A good example is the profile of the frog, the crocodile, and the hippo. All three have eyes and nostrils set high, allowing them to see and breathe while submerged. Convergence is very apparent in Australian marsupials. Red and grey kangaroos live in the grasslands. Like zebras and antelopes, they run very fast, live in herds, and have similar grazing-type teeth. Wombats dig burrows like prairie dogs, eat grass, and have teeth that grow continually, like those of a rodent. Tree kangaroos have taken to the trees, and while they are less agile than monkeys, they can leap long distances, helped by pads to cling with and tails to provide balance.

Evolution is a tremendously complex and fascinating story. It molds all living creatures. Hopefully it will be a continuing story. The next time you come to the Zoo, notice what makes each animal unique. You may develop a whole new outlook.

The Zoo's family of rare bongos have striking red and white striped coats that blend with their light-streaked African forest home.

ZOONEWS

Proboscis Monkey Is Nosiest Primate

For the first time in its 88-year history, the National Zoo is exhibiting the rare proboscis monkey from Borneo.

Proboscis monkeys (*Nasalis larvatus*) are spectacular in appearance. The male has a large "banana-like" nose that grows to such a size in some individuals that it must be lifted out of the way while the monkey eats.

The Zoo's pair—a six-year-old, 30-pound male and a four-year-old, 14-pound female—were a gift from the Djakarta Zoo in Indonesia. The National Zoo's Director, Dr. Theodore H. Reed, personally escorted the rare pair to Washington in an air cargo plane. Only four other zoos in the United States (Bronx, Dallas, Milwaukee, and San Diego) have proboscis monkeys.

The nose of the National Zoo's male is already three inches long. It is expected to continue to grow. Zoologists believe that the gargantuan nose is the result of selective adaptation: females prefer to mate with big-nosed males. As a practical device, the male uses his nose as a sound amplifier when making territorial calls. The sound has been described as a "honk" or "kee-honk." Others compare it to a bass violin. The softer calls of the female have been likened to the call of a goose. Female and young proboscis have smaller, upturned noses about the size of a human's.

Male and female specimens are similar in color: brick red faces and backs, yellow shoulders and thighs; grey arms and legs. The tails are white. Males are usually twice the size of females.

Bizarre in looks, the proboscis monkey is nevertheless thoroughly adapted to the environmental peculiarities of its island home in southeast Asia. They belong to the branch of Old World primates (*Cerocopithecidae*) that live in trees and eat leaves.

Proboscis monkeys have sack-like, stretchable stomachs that can store lots of leaves for digestion later. The sack-like stomach serves as a fermentation chamber where the food content is broken down by bacteria. This digestive process is similar to that in cows and camels.

In Borneo, these monkeys eat palm fruits, mature leaves of mangrove trees, vines, and flowers. Here at the National Zoo, their menu consists of willow leaves, bananas, apples, oranges, cabbage, beans, kale, potatoes, monkey chow, and primate diet.

In the wild, proboscis monkeys prefer swampy forest. They travel in troops of 10 to 50 or more individuals. Each troop has a specific home range, but there does not seem to be a rigid defense of territories or conflict between troops. A loose dominance hierarchy exists with males dominant over females and young, and certain males dominant over other males at preferred feeding and resting sites.

Like other leaf-eating monkeys in southeast Asia, they are superb climbers and fearless sky divers. They unhesitatingly leap from tree to tree with arms outstretched. When travelling they have been known to cover 150 yards in 60 seconds.

To cross rivers in Borneo, an entire troop may leap in the water and swim across. Scientist-explorer William Beebe once saw a swimming proboscis dive underwater for half a minute when a boat approached.

Proboscis are active during the day and spend most waking hours

looking for food. At night troops sleep in trees, usually near a river. The highest trees may be used night after night, since they provide the best view of the surrounding area.

There appears to be no set breeding season for proboscis monkeys. A single young is the rule, after a gestation period of about 166 days.

Proboscis monkeys are found only on Borneo, a large (290,000 square mile) tropical island off the Malayasian coast in the Indo-Australian archipelago. The terrain combines lush jungles and mountains. Proboscis share their island home with other interesting primates such as the pig-tailed and crab-eating macaques, silvered, maroon, and grey leaf monkeys, and orangutans.

Man also lives on Borneo, but the study of the unusual proboscis has been limited. Fortunately, the proboscis is protected, but there is always the danger that its swampy forest home could be drained or cut for timber in the name of progress or profit. Such actions could threaten not only this distinctive species but the entire supporting ecosystem as well.

The female half of the proboscis pair has an upturned nose about the size of a human's .

FONZ NEWS

President's Report

by Dr. Stephen T. Hosmer
FONZ President

Members of FONZ and guests. Tonight's annual meeting celebrates two events of particular note in FONZ history: It is the first time we have been able to gather in this splendid new Education-Administration Building, which now also houses our FONZ offices, and it also occurs on the eve of our 20th anniversary as an organization.

Ever since FONZ was founded in 1958, we have worked hard to live up to our name and serve the National Zoo as a special friend. I am pleased to report that over the past year we have been able to fulfill this role more extensively than ever before thanks to the growing support of you, our members, and the increasing success of FONZ-operated concessions. Because of these efforts, FONZ was able over the past twelve months to provide nearly $250,000 to fund a wide variety of educational, research, and conservation activities of direct benefit to the Zoo.

As you may recall, in 1976 FONZ began to support a new series of research and conservation projects being conducted by the National Zoo. We provided monies for six summer interns and research fellows to assist Zoo professionals in studies aimed at preventing extinction of animal species and assisting in breeding programs for endangered species. The Zoo considered this first intern and fellowship program to be so successful that this year we were requested to double our support. As a result, 15 interns from 15 different colleges in 11 states worked here this past summer. Some of the undergraduates assisted our veterinarians in diagnosing health problems in Zoo animals. Others did basic research in animal anatomy. One student specialized in the behavior and breeding patterns of the Zoo's rare Atlas lions. At the Zoo's Conservation and Research Center in Front Royal, Virginia, interns participated in field studies of the Père David's deer herd. The value of these research programs is perhaps best summed up in the words of one of the students, who wrote: "I was prodded, coaxed, and inspired into a frenzy of learning unlike anything I've ever known. I consider myself incredibly fortunate to have been able to experience the workings of one of the top research institutions in the country. The FONZ intern program is an invaluable tool in the education of future zoo professionals."

In 1976 FONZ was also asked to underwrite the costs of publishing the proceedings of two important National Zoo symposia, one on golden marmosets and the other on tree-dwelling leaf eaters.

This year we have continued to support research by funding the publication of the Zoo's 1976 conference on tuberculosis in zoo animals. This conference, which was also financed by FONZ, produced new and, for the first time, consistent diagnostic techniques to cope with this critical infection. We are now financing the program expenses for a fourth symposium, "Migrant Birds in the American Tropics," which is taking place this month and which is attempting to define the habitat requirements and measure the effects of forest cutting on these species—a matter of growing concern to zoologists.

Equally important have been our on-going educational efforts to explain zoology to thousands of touring school children. This year the location of FONZ and National Zoo education staffs in the same building made possible increasingly shared and creative efforts to bring the best of educational programs to students of all ages.

Some of you, I hope, saw as you

FONZ '78 Safaris

Planned exclusively for members, led by a professional zoologist or FONZ executive, and limited to 20 or less, a FONZ safari offers sights and privileges rarely available to others. Call 232-7700 for details.

JUNIOR SAFARI TO EAST AFRICA (July-August 1978)

FONZ's African study safari for young members (ages 13-20) is the most exciting ever. The month-long adventure includes a three-day camel trek, a hike up snow-capped Mt. Kenya, a visit to a Masai manyatta to meet the six-foot warriors and watch their war dances, and a sailing exploration by ancient Arab dhow up the Indian Ocean coast. Emphasis will be on African wildlife and conservation. Participants will stay in private tents in game parks and meet with experts such as Joy Adamson and chief game wardens. After stopovers and tours of London and Nairobi, three weeks will be spent "in the bush" on daily game runs through famed Serengeti, Amboseli, Tsavo, and Masai-Mara. Other highlights: night safaris, a visit to the ancient Afro-Arab island of Lamu, and all-night game watch at The Ark. The $2,650 cost includes all expenses except a few optional meals in London and Nairobi. Two adult chaperones will accompany the group.

INDIA-NEPAL-SRI LANKA (March 1978)

The greatest wildlife sights in India, Nepal, and Sri Lanka (formerly Ceylon) are part of this 28-day "Shikar" (Hindu for safari). Some game viewing will be done by elephant back! Special visits are planned to Corbett National Park, Ghana Bird Sanctuary, Assam, Delhi, and Jaipur to see rhinos, Gir lions, and white tigers. After viewing the Taj Mahal by moonlight, the group flies to the "top of the world" -- Nepal -- for a visit to colorful Katmandu and a night at famed Tigertops Jungle Lodge. Final days will be in beautiful Sri Lanka for tours of their game-rich preserves as well as the ancient cities of Kandy and Anuradhapura. The $2,676 cost includes a $100 tax-deductible contribution to FONZ.

RUSSIA-EASTERN EUROPE (June 1978)

A 22-day "behind-the-Iron Curtain" adventure offers an insider's look at the great zoos and wildlife parks of West and East Germany, Poland, Russia, Hungary, Czechoslovakia, and Austria. VIP tours and receptions have been planned in Berlin, Warsaw, Leningrad, Moscow, Prague, Budapest, and Vienna plus comprehensive city tours. The group will attend the renowned Moscow Circus, a Leningrad Folklore performance, and a Laterna Magica show in Prague. Travel from Leningrad to Moscow is on the famed "Red Arrow Express" train in "soft class" sleeper. A hydrofoil boat will be used to cruise up the "blue" Danube from Budapest to Vienna for a farewell banquet in picturesque Grinzing. The $2,282 cost includes a $100 tax-deductible contribution to FONZ.

AFRICA (September 1978)

This 26-day adventure is so unusual that it has been called the "Ultimate Safari" by several African wildlife experts. The itinerary is planned for those seeking only the most special and exciting of safari experiences. There are walking and canoe excursions, night game-watches, a special flight to remote Lake Rudolph where Richard Leakey has uncovered remains of earliest man, and a gorilla stalk with pygmy guides through the jungles of Zaire (formerly the Belgian Congo). Private tent camps will be used on the game-rich Serengeti Plains and at the foot of snow-capped Kilimanjaro. Special briefing sessions will be conducted by local wildlife experts throughout the trip. Most flights in Africa will be on private, chartered planes. Stopovers in London and/or Paris are planned on the way out and back. The all-inclusive cost of $4,448 includes a $100 tax-deductible contribution to FONZ.

came in tonight our Zoo Express parked just outside the entrance. In a way, this distinctively decorated bus symbolizes our determination to make it possible for schools that cannot afford bus transportation to visit the Zoo. It also typifies the shared funding efforts between FONZ and the National Zoo. The bus itself was obtained free by the Zoo as government surplus; the Zoo's graphics department designed the decor; and FONZ funds paid for painting, insurance, and the salary of the bus driver. So far the Zoo Express is a pilot project, but if all goes well, we hope to expand this effort.

Along with the new Zoo Express have come other innovative educational programs. FONZ and the NZP staffs have worked out a series of multiple-visit Zoo tours and teacher workshops for nine D.C. public schools in Region II, another pilot project we hope to later expand. They have also developed a primate course to be part of the curriculum in certain high schools and are now working on a new audio-visual program for three- and four-year olds that can be used by either schools or community organizations.

Later this evening, I hope you will visit the new ZooLab located just behind this auditorium. Here you can discover—as we hope teachers and families soon will—a variety of fascinating touch-and-try materials such as animal bones, horns, and skins, along with a collection of learning and reference materials. There isn't anything quite like this in any other zoo, so FONZ is proud that some of its funds and volunteers are playing an important role in its development and operation.

This summer more than 60 junior FONZ members put on, for the second year in a row, an animal-themed puppet show that on occasion attracted standing-

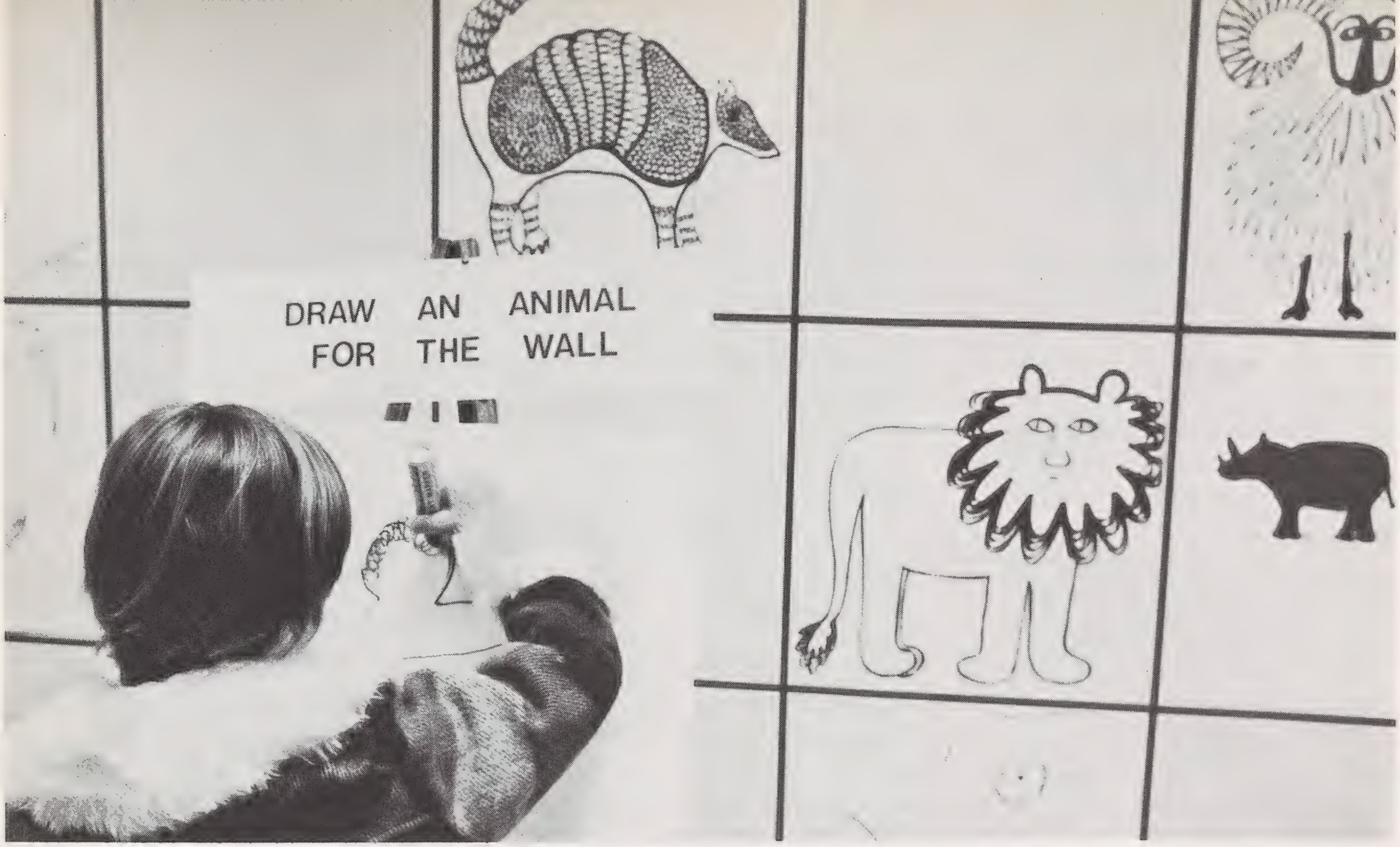
The colorful Zoo Express, which provides free transportation to school groups, is one of several innovative, educational programs now supported by FONZ.

room-only crowds. The professional staff of the Bob Brown Puppeteers created the puppets and supervised the training of our junior members.

As exciting and successful as this year's educational programs have been, none of this would have been possible without FONZ's most important creative resource —our volunteer guides and aides. This past year we estimate that FONZ volunteers contributed no fewer than 10,000 hours of their time to conducting school tours for over 9,000 children, answering questions from the public, assisting our full-time staff, and aiding Zoo scientists in carrying out animal behavior studies. It is impossible to thank our volunteers enough for their dedication and contributions.

Educational programs and special events organized just for you—the FONZ member—have also been expanded during the year. A wildlife adventure booklet sent to you several months ago announced more than 30 different member programs that ranged from classes, lectures, and trips to free treasure hunts and guided Zoo tours. Soon you will receive a similar booklet inviting you to a winter-long series of

At the new ZooLab in the Education-Administration Building, visitors learn about zoo animals by handling actual bones, skins, feathers, and eggs.



Supplied with paper and pencil, many youngsters "draw an animal for the wall" at the FONZ-supported ZooLab.

what we hope will prove to be equally interesting and diverse events.

Already, FONZ members have safaried across Africa, explored the South Pacific, and followed Darwin's footsteps through the Galapagos Islands. This spring 21 FONZ members will, hopefully, depart on the first ever FONZ-sponsored trip to the People's Republic of China for a first-hand look at their pandas.

The growth in special activities for you has come about because of the interest and participation of our dues-paying membership that now stands at over 11,000. That makes FONZ one of the three largest zoological societies in America.

The bulk of revenues generated by FONZ continues to come from our concession operations—food, souvenirs, trackless train tours, and public parking services. Net revenues have never been better, as your Treasurer will soon report. And we have concerted every effort to keep our commitment to assuring a continual upgrading of quality and service at reasonable prices. For hungry zoogoers who may want an alternative to the more conventional fare, we opened this summer a wine and cheese kiosk atop Bird House Hill. It's the only place I know where you can sit on an umbrella-shaded deck, sip wine, and watch elephants, pandas, and birds. Also for the first time this summer, we served scooped ice cream, frozen yogurt, and sundaes at the Mane Restaurant.

We have also sought to upgrade the inventory of our gift shops by

adding new items made especially for FONZ and to improve shop display and service window areas.

To add another dimension to our shop facilities, we will soon open a Bookstore and Gallery just off the main lobby of the Education-Administration Building. Although we are a few weeks away from stocking the shelves with one-of-a-kind items, I hope you will note the location of this shop on your tour of the building and plan to return when it opens in late November.

Finally, we must acknowledge the vital contributions of our FONZ staff. From our Executive Director, Sabin Robbins, and his Associate Director, Dennis Baker, on down, this organization continues to be served by an extraordinary corps of dedicated and talented people. They, along with our volunteers and the support we have received from Ted Reed and the Zoo staff, have made it possible for FONZ to look back on the past year with pride. And, given the sturdy foundations already laid in our education, membership, and visitor service programs, there is every promise that in our 20th year FONZ will prove an even stronger and more effective friend of the National Zoo. To all of you, our thanks for making it possible.

Treasurer's Report

by M. Anthony Gould
FONZ Treasurer

I am pleased to report that FONZ is experiencing its best year ever financially. Through September 30, after nine months of our fiscal year, we were 35% ahead of last year in total net income, $236,666 compared to $175,004. We are predicting a net of $164,000 at year-end vs. approximately $120,000 in 1976.

Food Services continue to lead the way with a 66% increase in net income over last year. Sales were much better than expected through the first nine months, totalling nearly $800,000. We owe a debt of gratitude to Food Manager, Mike Gill, and his staff for doing such an excellent job of serving the public and of being FONZ's major income producer. No doubt the 1977 figure will serve as a benchmark for the future.

Membership and Publications income was more in 1977 than in 1976, while the Gift Shop and Trains held their own. Only Parking proved to be a loser, and this was expected. Continued Zoo construction has greatly reduced the number of spaces available to the public. It is hoped that the parking facility being built on the roof of the Zoo's new service building will partially alleviate this problem.

Of course, there is one department that always loses money in a strictly financial sense, but it is a loss we always look forward to since it benefits everyone who visits the National Zoo. I am speaking of Education, as you can probably guess, and would like you to know that Dr. Hosmer's comments on FONZ spending on educational and research projects represents a 40% increase over last year. We look forward to continuing to assist Dr. Reed in this regard and already have a long list of requests for next year.

Associate Director, Dennis Baker, and all of the department heads are to be particularly complimented for the skillful way they have prepared and met their budgetary requirements. For example, in the month of July, Shop income was projected at $88,400 and actually came in at $88,370, a difference of only $30! Train income was figured at $16,000; the actual figure was $15,814. Parking was projected at $23,500, while actual income was $24,902. Food Services income was projected at $140,000 and came in at $142,101. We obviously do a better job of prog-

FRIENDS OF THE NATIONAL ZOO
BALANCE SHEET
As of September 30, 1977
Assets

CURRENT ASSETS:		
Cash on Hand	$ 8,647	
Cash in Bank	76,280	
Cash in Savings	264,923	
Investments	166,216	
Accounts Receivable	1,029	
Inventory	98,061	
Bags & Supplies	6,536	
Prepaid & Deferred Expenses	21,266	
TOTAL CURRENT ASSETS:		$ 642,958
FIXED ASSETS:		
Shop Building	$ 110,251	
Bookstore	10,504	
Furniture & Equipment	65,695	
Library	2,232	
Train Equipment	116,190	
Restaurant Equipment	90,813	
Restaurant Building	91,567	
Restaurant Improvements	87,439	
Parking Equipment	22,362	
Accumulated Depreciation	(231,862)	
TOTAL FIXED ASSETS:		365,191
TOTAL ASSETS:		$1,008,149

LIABILITIES AND FUND BALANCE

CURRENT LIABILITIES:		
Accounts Payable	$ 57,455	
Accrued Salaries	17,111	
Taxes Payable	25,618	
TOTAL CURRENT LIABILITIES:		$ 100,184
NOTES PAYABLE:		
Smithsonian Institution	$ 121,305	
TOTAL NOTES PAYABLE:		121,305
UNEXPENDED FUND BALANCE:		
Balance January 1	$ 549,800	
Net Profit	236,860	
TOTAL UNEXPENDED FUND BALANCE:		786,660
TOTAL LIABILITY & UNEXPENDED FUND BALANCE:		$1,008,149

nosticating than the local weathermen! On the expense side, there were no real surprises. Suffice it to say that our concessions have done well. The bitterly cold winter hurt us, of course, but the summer was another good one for FONZ.

Briefly, let me review some of the "happenings" in 1977 and give you an idea of what's ahead financially.

For the first time, the Smithsonian Institution's auditors visited FONZ. In fact, they spent eight weeks with our staff. Their findings resulted in a few small bookkeeping and cash control recommendations. A new purchase order system was also started, even though it had been in process before the auditors arrived. The Smithsonian is also developing a format for reporting FONZ's financial position to the Institution on a quarterly basis. In general, the auditors were pleased with what they found at FONZ.

We have changed certified public accountants and hired the firm of Matthews, Carter and Boyce. This had nothing to do with the Smithsonian audit. Matthews, Carter and Boyce handles a number of non-profit organizations in the area, and we feel that FONZ has

grown to such a degree that it merits the attention and expertise this firm can give us.

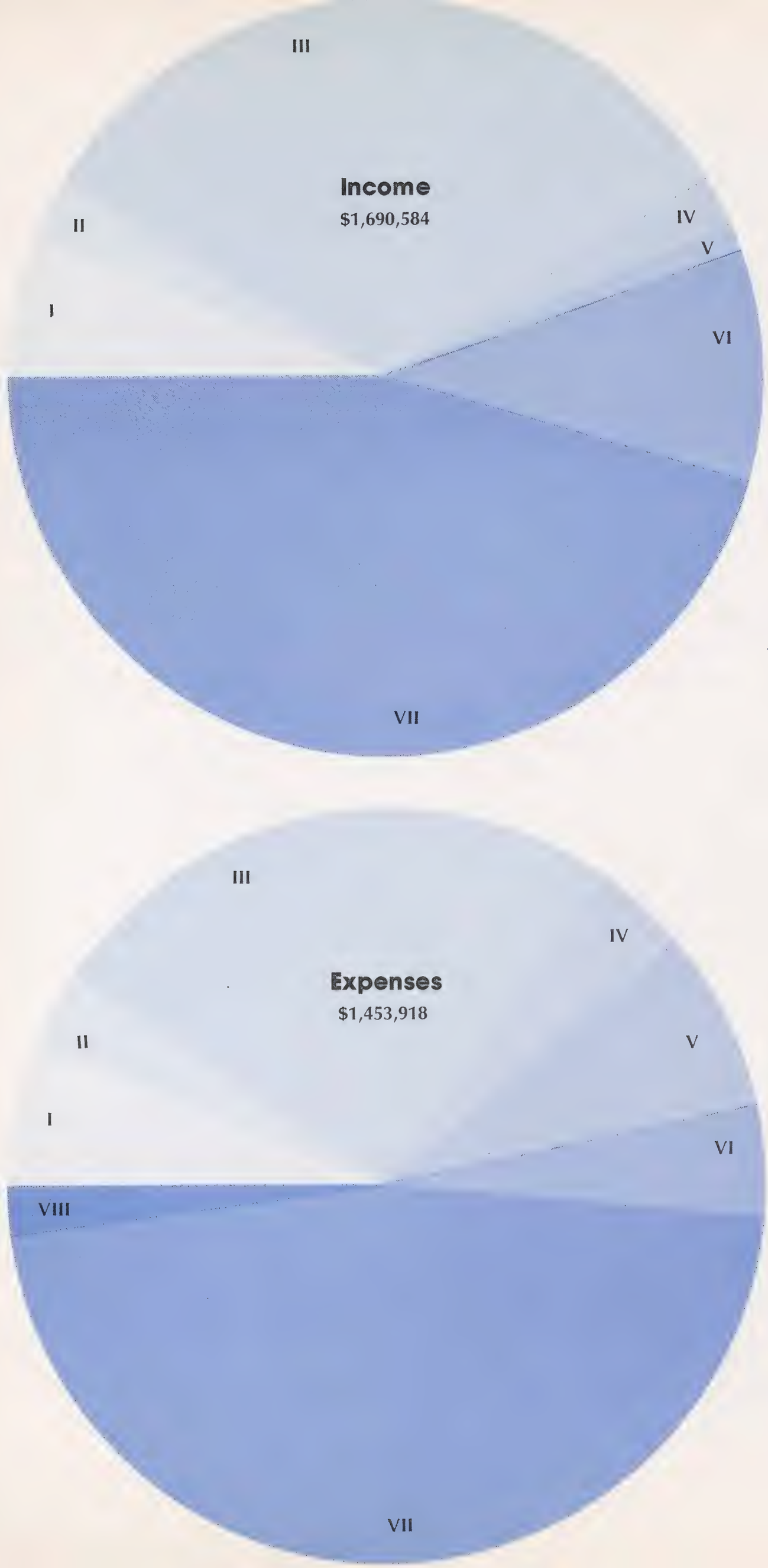
And the staff now has a pension plan. This was approved recently by the Board of Directors and required a $7,000 initial contribution by FONZ. It was long overdue and has been well received by FONZ employees.

With the help of our oft-used consultant, Gerry Ward, the Gift Shops have been reorganized. This involved a new commissary inventory system and getting competitive bidding on FONZ merchandise. As a result, we have experienced a 4% reduction in cost of goods sold and feel the merchandise quality is still excellent. Sales could have been better this summer; in fact they declined somewhat compared with last year, but we attribute part of this to the heat in July and August when people visiting the Zoo seemed to prefer buying soft drinks or ice cream to purchasing such souvenirs as stuffed pandas. One can hardly blame them!

In terms of capital improvements, FONZ has constructed a handsome Book-Gift Store in the lobby of the new Education-Administration Building. Food Services investments included converting the snack line in the Mane Restaurant to the "Ice Cream Scoop," and constructing the Wine and Cheese Kiosk near the Bird House. This latter FONZ food facility, together with the Panda Roof Garden, was favorably reviewed in the Washington *Post*.

Other than current bills, our only outstanding obligation is approximately $120,000 which we owe the Smithsonian Institution. As you may recall, this loan was made to FONZ to enable us to renovate and upgrade the Zoo's food facilities.

We have accumulated a cash surplus this year, and believe that it will be considerably more than last year's figure of $33,000. However, we are heading into the cold weather months when business is incredibly slow—in fact, when we operate at a loss. To date we have followed a conservative policy of investing excess funds in savings accounts, Treasury Bills, and bank certificates of deposit. We are also engaged in short- and long-range planning. Short-range plans include additional concession stands which might open in the new Beaver Valley or bear exhibit area; finding an alternative to the trackless trains or purchasing new engines and cars if the present system is kept; investing in tools and equipment for heavy duty, in-house maintenance of FONZ equipment, all of which will take place in the Zoo's service building when it is completed; painting and sprucing up existing FONZ facilities. A long-range project is to put FONZ on such sound financial footing that we can always meet the needs of the National Zoo as well as our own goals and obligations. With much of our accelerated growth and heavy capital investment behind us, I think that every member of FONZ can look to a future that is stable financially and will allow us to turn more and more of our energies to our real goal—education.



January-September 1977

Income

I Membership	$ 92,839
II Publications	35,920
III Gift Shops	542,977
IV Trains	67,030
V Education	12,142
VI Parking	143,274
VII Food Services	796,402
TOTAL	$1,690,584

Expenses

I Membership	$ 78,715
II Publications	35,198
III Gift Shops	377,418
IV Trains	73,171
V Education	97,372
VI Parking	120,930
VII Food Services	644,234
VIII Zoo Support	26,880
TOTAL	$1,453,918

FONZ Doubles Research Support

by Dr. Dale Marcellini
Research Curator

A young woman unobtrusively follows a group of visitors through the bird house; a student carefully takes notes in front of a small cage in the Research Building; a young man watches lizards under a Florida night sky. All are recipients of FONZ traineeship grants.

In 1977 the Friends doubled its student aid program because of the initial successes in 1976. The enlarged 1977 program involved 15 students from 15 different colleges in 11 states. These young people worked under professionals in seven Zoo offices.

Randy Jacobson, from Purdue University, worked in all areas of the Office of Pathology. He assisted in autopsies, kept records, and helped prepare tissue slides for diagnosing health problems.

Ronald W. Leiniger, a pre-veterinary student from the University of California, worked on necropsy procedures in the Office of Animal Health. He carried out dissections, collected tissue, and prepared slides for histopathology. In spite of this nearly full-time job, Ron completed a successful project to determine the type and extent of tissue reaction in birds given intramuscular drug injections.

A Scripts College student, Diana Kwong, worked in the Office of Education and Information. The Zoo wanted to know how visitors used the new trails and how self-guides might work along the trails. Concentrating on the Crowned Crane Trail, Diana observed and reported that zoo-goers enjoy the new trail system, but she also pinpointed problems that are now being corrected.

Two trainees, Catherine Laughlin, from the State University of Buffalo, and Sister Laurus Slee, of Illinois Institute of Technology, worked in the Office of Graphics and Exhibits developing labels for animal identification and assisting in silk screen work for outdoor maps and special signs.

Thomas Keefer, a University of Texas student, studied the behavior and ecology of two species of lizards in the Florida Keys. He found that when the two species lived in different geographical areas, they had similar 24-hour-activity patterns, but when they shared the same territory, their behavior patterns were not alike. His observations provide one of the best examples ever documented of competition among animals that results in behavioral changes.

William B. Karesh, from Clemson University, divided his time between the Office of Animal Management (OAM) and the Office of Zoological Research (OZR). At OZR he transcribed video tapes of the giant panda mating sessions of 1976 and 1977. Bill also studied changes in intersexual activity during estrus in the giant panda. At OAM he developed a behavioral check sheet for the rare Atlas lion cubs.

The Conservation and Research Center at Front Royal benefited from the efforts of four trainees: Barbara Doran, Wheaton College; Ann Hedrick, University of Virginia; Dale Lytle, William Patterson College; and Emily Meriwether, University of Georgia. All worked on a study of the sociobiology of the Pére David's deer. They took extensive field notes, recorded vocalization, and photographed behavior displays. These students provided a nearly continuous watch on the herd to document the behavior of each individual.

Four student interns assisted the Office of Zoological Research. Michele Moore, from the Uni-

versity of Illinois, studied mother-young interactions in hoofed stock. Steve Paulson, of Earlhem College, studied the golden lion marmoset, even serving as a foster father in the hand-rearing of an infant marmoset.

Kent Redford, of Harvard University, worked on mother-young relations in hoofed stock, especially the secretive dik-diks, and on social behavior of rare elephant shrews.

Susan McGrath (Bennington College) helped in a continuing study of eastern blue birds at the Conservation and Research Center. She found that young born early in the year help parents raise later broods. Susan also discovered that female as well as male blue birds will attack a male model. These findings will reinforce the Zoo's commitment to improve blue bird breeding, which has dwindled as houses and farms replace forests and fields.

The summer 1977 trainee program benefited the Zoo, the scientific community, animal conservation efforts, and equally important, the students.

"I was prodded, coaxed, and inspired into a frenzy of learning that is unlike anything I have experienced," said one student. Another wrote, "I consider myself incredibly fortunate to have been able to experience the workings of one of the top research institutions in the country and the processes of an animal management complex of equal par. The FONZ traineeship program is a valuable tool in the education of future zoological workers."

On behalf of the staff of the National Zoo, I would like to thank the FONZ for their support and encourage you to continue this program, which is so beneficial to so many people.

FONZ Opens Bookstore & Gallery

A large menagerie of new animals has arrived at the Zoo for all to enjoy—and buy!

The wildlife collection fills FONZ's newest facility, the Bookstore and Gallery, just inside the Education/Administration Building. There are jeweled gold owls from Nepal, lacquered tiger boxes from Kashmir, ceramic birds from Mexico, and hand-carved wooden animals from Africa.

The new book, print, and gift store is open weekdays from 11 a.m. to 3 p.m. and weekends from 11 a.m. to 4 p.m. FONZ members are entitled to a 10% discount on all purchases.

Unlike the souvenir-themed Mane and Panda Shops, the Bookstore and Gallery will carry a comprehensive collection of outstanding animal books for adults and children, wildlife prints by noted artists, and unusual animal-themed gifts found in few other places.

Special efforts have been made to obtain original animal paintings, drawings, and sculptures from talented artists around the world. At the moment, the store features

never-before-shown drawings by Kamante, hero of Isak Dinesen's classic book, *Out of Africa;* bright applique cloth animals from Kenya; and dramatically lifelike bronze and ceramic sculptures of popular zoo animals. Of particular interest are the limited edition color prints of the Zoo's white tigers, "Mohini and Cub," by the renowned wildlife artist, Edward Bierly. Most of the proceeds from the sale of this print go to the "Save the Tiger Fund."

Many of the modestly-priced gifts are substantially below normal market prices. For instance, the $2 carved animal napkin rings usually cost around $4.

Other attractive items include animal-themed napkins, glasses, coasters, desk items, plates, cups, trays, jewelry, and stationery.

So if you're looking for that special gift sure to delight any animal lover—or yourself—head for FONZ's new Bookstore and Gallery.

Great books, fine prints, and unusual handmade gifts from around the world fill the new FONZ Bookstore & Gallery located in the lobby of the Education-Administration Building. Open daily, the shop offers 10% discounts to FONZ members.

FONZ Winter Calendar of Events *

FEBRUARY

2 Thursday
FONZ Film—Arctic Animals

Follow the fascinating life cycle of the tundra wolf from the birth and raising of cubs to the hunting packs that prey on caribou to survive.

5 Sunday
FONZ Film—Arctic Animals

13 Monday
Audubon Lecture—Papua New Guinea: Twilight of Eden

15 Wednesday
Photo Contest ends.

MARCH

5 Sunday
FONZ Lecture—Animal Mime

The fascinating art forms of mime and improvisation will be presented by Archaesus with audience participation encouraged.

8 Wednesday
Opening of Photo Exhibit—Lobby of Education/Administration Building

11 Saturday
Family Day with the Wings of the Zoo

12 Sunday
Free tours for members ONLY

18 Saturday
Family Day with the Wings of the Zoo

20 Monday
Audubon Lecture—The Return of the Peregrine Falcon to the Eastern United States

SPRING SNEAK PREVIEW

Among the many popular events this spring will be day trips to the Bronx Zoo and the Conservation and Research Center at Front Royal, more exciting and educational classes, a treasure hunt, and a lecture program by Dr. Theodore Reed, Director of the National Zoological Park.

Ultimate Safari

There are still openings for a remarkable East African safari for 26 days in September. Less than a dozen people will be taken. In addition to canoe excursions and private, deluxe tenting at the foot of snow-capped Kilimanjaro and on the game-rich Serengeti Plains, there will be an exciting gorilla stalk using pygmy guides and a charter flight to Kenya's remote Lake Rudolph where remains of earliest man have been found by Richard Leakey.

Special receptions with noted wildlife experts have been planned throughout. Cost for the Ultimate Safari is about $4,448, which includes a $100 tax-deductible donation to FONZ. For details contact the Office of the Executive Director at 232-7700.

*For more details please call the membership office at 232-7700.